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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,197	11/26/2003	Ramgopal Darolia	128693	1196
30952	7590	10/22/2004		
HARTMAN AND HARTMAN, P.C. 552 EAST 700 NORTH VAIPARAISO, IN 46383				
			EXAMINER MCNEIL, JENNIFER C	
			ART UNIT	PAPER NUMBER
			1775	

DATE MAILED: 10/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,197

Applicant(s)

DAROLIA ET AL.

Examiner

Jennifer C McNeil

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 19 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 states that the interior region is formed of a ceramic material so as to have a lower thermal conductivity than zirconia stabilized by about 7 wt% yttria. The claims also make zirconia stabilized with yttria a possible ceramic composition for the coating. It is not clear how the ceramic material has a lower thermal conductivity. Is there a different amount of yttria added?

Claim 3 states that the thermal barrier coating consists essentially of zirconia and a stabilizer. The thermal barrier coating comprises both the outer and inner regions. It is not clear how they could not have the same composition if the entire thermal barrier coating is said to consist essentially of a certain material. How is claim 4 further limiting? The same analysis applies to claim 6.

Claim 9 states that the inner and outer regions are composed of different materials. However, the first region may be zirconia and an additional ceramic selected from a group that includes yttria, and the second region is zirconia stabilized by yttria. Should yttria not be a choice for a stabilizer in the first region?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 13, 14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rickerby (US 6,183,884). Rickerby teaches a thermal barrier coating comprising different regions. The first region and a second region can be clearly seen in the Figures. The coating gradually widens as the coating grows in thickness (see Figures). This widening is considered to cause the columns to be more closely spaced. While Rickerby does not specifically teach that the inner region is thicker than the outer region, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a thickness suitable to provide erosion resistance, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

Regarding claims 3, and 16, the coating may comprise YSZ.

Regarding claims 13, and 16, as the coating is structurally and compositionally similar to the instant claims, it is expected that the coating would possess similar characteristics.

Rickerby teaches that the coating has a lower thermal conductivity than a typical YSZ layer.

Claims 1-6, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy (US 6,689,487). Murphy teaches a substrate having a thermal barrier coating thereon. The coating may comprise zirconia stabilized by up to two oxides (col. 3, lines 39-45). Murphy teaches a first region that has primary columnar grains and a second region that further includes integral secondary columnar grains. These secondary grains are considered to be more closely spaced than the columns of the first

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region. Murphy teaches that the coating has a reduced thermal conductivity as compared to a conventional thermal barrier coating. While Murphy does not specifically teach that the first region is thicker than the second region, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a thickness suitable to provide erosion resistance, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USPQ 233).

Regarding claims 3 and 5, examples are given of zirconia with hafnia and yttria.

Regarding claim 13, as the coating is structurally and compositionally similar to the instant claims, it is expected that the coating would possess similar characteristics.

Allowable Subject Matter

Claims 7-12, 19, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach or render obvious a coating having all the limitations of claim 1, and further wherein the interior region and the outer surface region do not have the same composition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer C McNeil whose telephone number is 571-272-1540. The examiner can normally be reached on 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jennifer McNeil
Primary Examiner